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JOYNER, KEVIN				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/789,699

Applicant(s)

USLENGHI ET AL.

Examiner

KEVIN C. JOYNER

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-16 and 21-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-16 and 21-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4, 5, 7-10, 12-16, 21-23, 25, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arts et al. (U.S. Publication No. 2004/0146437) in view of Ichikawa (U.S. Patent No. 6,421,915).

Arts et al. discloses an indoor air quality module comprising:

A compartment having an inlet and an outlet;

A filter (12) located between the inlet and the outlet;

An ultraviolet light source (54) which directs ultraviolet light towards the filter; and

A shield (56a-b) positioned on an opposite side of the filter from the ultraviolet light source, wherein the shield includes a planar portion, the filter defines a filter height, the shield defines a shield height, and the shield height is less than the filter height as shown in Figures 1 & 4. More specifically, Figure 4 is a detailed view of the filter (12) as shown in Figure 1, wherein the height of the filter is defined by the case (36). As shown in Figure 4, each shield (56a-b) comprises a height that is smaller than the filter (12). Arts does not appear to disclose that the filter is a particular monolithic filter comprising a photocatalytic coating on said monolith. Ichikawa discloses a monolithic filter coated

with a catalyst that is utilized in indoor air quality modules wherein the monolith comprises a honeycomb shape (concerning claim 4) with a plurality of hexagonal passages (concerning claim 5) that provides an appropriate filter that reduces the amount of harmful gases such as carbon monoxide and nitrogen oxide in the air (column 1, lines 20-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a monolithic filter comprising a honeycomb shape with hexagonal passages as one of the filters in the module of Arts in order to provide an appropriate filter that reduces the amount of harmful gases such as carbon monoxide and nitrogen oxide in the air as exemplified by Ichikawa.

Regarding claim 2, the shields of Arts in view of Ichikawa are capable of reflecting the ultraviolet light that passes through the monolith towards the monolith to minimize leakage of the ultraviolet light from the module (paragraphs 14, 17 and 49).

With regard to claims 7-9, the reference continues to disclose that the shield has upper and lower edges, and wherein the upper and lower edges define an upper and lower gap that are substantially equal in height with respect to the upper and lower portions of the compartment as shown in Figure 4. More specifically, the shield (56b) located approximately directly in the center of the compartment satisfies these limitations as set forth. Concerning claim 10, Arts in view of Ichikawa also discloses that the monolith comprises first and second monoliths and that the ultraviolet light source is located between the first and second monoliths as shown in Figure 4. More specifically, the monolith (12) is divided into chambers by separate individual monoliths that comprise a mesh to filter contaminants in the air (paragraphs 53 and 59), wherein

each monolith is defined by an upstream side (12a) and a downstream side (12b). As shown in Figure 4, three of the five ultraviolet light sources are located between two opposing monoliths, and therefore meet the limitations of the claim.

Claims 12 and 13 further requires that the that the shield height is determined by the equation;

$$H = 2 \cdot D \cdot \tan(\alpha)$$

Wherein H is defined as the shield height, D is defined as a distance between the ultraviolet light source and the shield, and α is defined as a maximum angle from horizontal that ultraviolet light can pass through the monolith without contacting the monolith. However, it would have been well within the purview of one of ordinary skill in the art to optimize the shield height with respect to the distance and angle as set forth above in order to provide optimal reflectivity and limit the amount of air that is blocked by the shields when passing through the module. Only the expected results would be attained.

Regarding claim 14, Arts discloses an indoor air quality module (Figure 1) comprising:

A compartment having an inlet and outlet;

A first filter located between the inlet and the outlet of the compartment and having a filter height;

A second filter located between the inlet and the outlet of the compartment and having a filter height (four monoliths are shown in Figure 4, wherein each are defined by an upstream side (12a) and downstream side (12b));

An ultraviolet light source (54) adjacent the first filter and the second filter which directs UV light towards the first and second monolith;

A first shield (56b) having a shield height less than the filter height, wherein the first shield includes a planar portion; and

A second shield (56a) having the shield height and the planar portion,

Wherein the first filter and the second filter are located between the first shield and the second shield, the first shield capable of reflecting the ultraviolet light that passes through the first filter towards the first filter to minimize leakage of the ultraviolet light from the module, and the second shield capable of reflecting the ultraviolet light that passes through the second filter towards the second filter to minimize leakage of the ultraviolet light from the module. Arts does not appear to disclose that the filters are particular monolithic filters comprising a photocatalytic coating on said monolith. Ichikawa discloses a monolithic filter coated with a catalyst that is utilized in indoor air quality modules wherein the monolith comprises a honeycomb shape with a plurality of hexagonal passages in order to provide an appropriate filter that reduces the amount of harmful gases such as carbon monoxide and nitrogen oxide in the air (column 1, lines 20-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize monolithic filters as the filters in the module of Arts in order to provide an appropriate filter that reduces the amount of harmful gases such as carbon monoxide and nitrogen oxide in the air as exemplified by Ichikawa.

Regarding claim 15, the limitations are met with respect to claims 7-9 above. Therefore, their explanations are relied upon as necessary.

Claim 16 further requires that the shield heights are determined by the distances between the ultraviolet light source and the shields as well as a maximum angle from horizontal that ultraviolet light can pass through the monoliths without contacting the monoliths. However, it would have been well within the purview of one of ordinary skill in the art to optimize the shield height with respect to the distance and angle as set forth above in order to provide optimal reflectivity and limit the amount of air that is blocked by the shields when passing through the module. Only the expected results would be attained.

Regarding claims 21 and 25, Arts continues to disclose that the shield is continuous such that air does not pass through the interior of the shield (paragraph 17 and 49). Concerning claims 22 and 23, as broadly defined, the shield (56a-b) is substantially parallel to the monolith (12), and substantially parallel to the ultraviolet light source in Arts in view of Ichikawa. It is important to note that the monolith as a whole (12) is parallel with the shields of the invention. Regarding claims 27 and 29, Arts in view of Ichikawa also discloses that the monoliths and shields are substantially parallel (as shown in Figure 4), and the ultraviolet light source is located between the monoliths (as described above with respect to claim 10).

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arts et al. (U.S. Publication No. 2004/0146437) in view of Ichikawa (U.S. Patent No. 6,421,915) as applied to claims 1 and 14 above, and further in view of Say et al. (U.S. Patent No. 5,790,934).

Arts in view of Ichikawa is relied upon as set forth above. Arts in view of Ichikawa does not appear to disclose that the photocatalytic coating is titanium dioxide. However, titanium dioxide is a commonly used and conventionally known material for photocatalytic coating in the art of purifying air. Say discloses an indoor air quality module comprising: a compartment having an inlet and an outlet; a monolith located between the inlet and the outlet; a photocatalytic coating on the monolith; and an ultraviolet light source which directs ultraviolet light towards the photocatalytic coating (Figures 1-9; column 2, lines 35-47). The reference continues to disclose that the photocatalytic coating is titanium dioxide (column 5, lines 52-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Arts in view of Ichikawa to utilize titanium dioxide as the photocatalytic coating, as such is commonly used and a conventionally known material for a photocatalytic coating in the art of purifying air as exemplified by Say.

4. Claims 6, 24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arts et al. (U.S. Publication No. 2004/0146437) in view of Ichikawa (U.S. Patent No. 6,421,915) as applied to claim 1 above, and further in view of Engel et al. (U.S. Patent No. 6,805,733).

Concerning claim 6, Arts et al. is relied upon as set forth in reference to claim 1 above. Arts et al. does not appear to disclose that the shield comprises a sheet metal. Engel discloses an indoor air quality module comprising an apparatus including an ultraviolet light source and a set of shields for said ultraviolet light source (column 3,

lines 1-22; Figures 1-3). The reference continues to disclose that the shields comprise a sheet metal in order to adequately reflect the ultraviolet radiation. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the shield of Arts to comprise a sheet metal in order to adequately reflect the ultraviolet radiation as exemplified by Engel.

Arts et al. is relied upon as set forth in reference to claims 1 and 14 above, wherein Arts continues to disclose that the shield includes a first edge and a second edge that are substantially parallel and a third edge and a fourth edge that are substantially parallel, wherein the height is defined by the third and fourth edge and a space is defined between each of the third edge and the fourth edge and the compartment as shown in Figure 5. Furthermore, the reference also discloses that the shields are supported by the housing of the unit (paragraph 51). More specifically, in light of the Applicant's specification, the shield of Arts comprises six edges. The first and second edges are the edges that connect the shield to the housing of the decontamination unit, which are parallel. The third and fourth edges of the shield are the edges that connect the parallel portion of the shield (with respect to the UV light), to the diagonal portions of the shield. As shown in Figure 5, these edges are parallel with each other as well and further define a space between said third and fourth edges and the compartment housing. Arts does not appear to specifically disclose how the shields are supported/connected to the housing. However, it is extremely well known in the art to connect a set of shields to a support member (such as a compartment) with a fastener. Engel discloses an indoor air quality module comprising an apparatus

including an ultraviolet light source and a set of shields for said ultraviolet light source (column 3, lines 1-22; Figures 1-3). The reference continues to disclose that the shields are connected to a housing by fasteners in order to support and stabilize the shield members in the module (column 5, lines 39-46; Figure 2). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to connect the shield to the compartment housing by fasteners in order to support and stabilize the shield members in the module as exemplified by Engel.

5. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arts et al. (U.S. Publication No. 2004/0146437) in view of in view of Ichikawa (U.S. Patent No. 6,421,915) as applied to claim 1 above, and further in view of Bigelow (U.S. Patent No. 6,500,387).

Arts is relied upon as set forth in reference to claim 14 above, wherein Arts in view of Ichikawa discloses that the monolith comprises a plurality of monoliths in a V-shaped configuration as shown in Figure 5. Thus Arts in view of Ichikawa does not appear to disclose that the monoliths are substantially parallel to the shields. Bigelow discloses an indoor air quality module comprising: a compartment having an inlet and an outlet; a plurality of monoliths (20 & 22) located between the inlet and the outlet; a photocatalytic coating on the monolith (column 12, lines 1-10); an ultraviolet light source (50) which directs ultraviolet light towards the photocatalytic coating; and a shield (26) adjacent the monolith as shown in Figures 2 & 2A. The reference continues to disclose that the shield comprises a sheet metal (column 12, lines 10-16), and that the monoliths

are comprised of a coarse monolith and a fine monolith in order to trap large particulates separately from smaller particulates (column 11, lines 40-65). The reference continues to disclose that the monoliths are mounted in a configuration that is substantially parallel with the shields (as shown in Figures 1-6) in order to prevent the contaminated air from passing through the module without entering both the coarse and fine monolith. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Arts to provide the monoliths in a parallel configuration with the shields in order to prevent the contaminated air from passing through the module without entering both of the monoliths as exemplified by Bigelow.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-5 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, and 8-12 of copending Application No. 10/788845 in view of Arts et al. (U.S. Publication No. 2004/0146437). Claims 1-3 and 8-12 of Application No. 10/788845 disclose all of the limitations of claims 1-5 from the instant application except for the shield positioned on an opposite side of the monolith from the ultraviolet light source. However, as discussed above, Arts discloses a shield positioned on an opposite side of the monolith from the ultraviolet light source in an indoor air quality module. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify '845 to include a shield positioned on an opposite side of the monolith from the ultraviolet light source in order to reflect the unused ultraviolet light towards the monolith as exemplified by Arts.

This is a provisional obviousness-type double patenting rejection.

8. Claims 1-5 and 10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, and 10-12 of copending Application No. 10/789962 in view of Arts et al. (U.S. Publication No. 2004/0146437). Claims 1-3 and 10-12 of Application No. 10/789962 disclose all of the limitations of claims 1-5 and 10 from the instant application except for the shield positioned on an opposite side of the monolith from the ultraviolet light source. However, as discussed above, Arts discloses a shield positioned on an opposite side of the monolith from the ultraviolet light source in an indoor air quality module. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify '962 to include a shield positioned on an opposite side of the monolith from the ultraviolet light source in order to reflect the unused ultraviolet light towards the monolith as exemplified by Arts.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

9. Applicant's arguments, see pages 7 and 8, filed February 19, 2009, with respect to the rejection(s) of claim(s) 1 under 35 U.S.C. 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Arts et al. (U.S. Publication No. 2004/0146437) and Ichikawa (U.S. Patent No. 6,421,915).

10. Applicant's arguments filed February 19, 2009 with respect to Arts et al. (U.S. Publication No. 2004/0146437) and Ichikawa (U.S. Patent No. 6,421,915) have been fully considered but they are not persuasive.

The Applicant argues that Arts does not suffer from ineffective purifiability of air quality. Therefore, the combination of Arts in view of Ichikawa is unnecessary. Furthermore, Arts teaches against the proposed modification of Ichikawa in that the honeycomb shape of Ichikawa would undesirably allow contaminants to move more freely in and through the hexagonal passages of the proposed monolithic filter of Ichikawa. Finally, the suggested modification of Arts in view of Ichikawa would require a substantial reconstruction and redesign of the filter of Arts, and would change the basic principle of operation of Arts, which is improper under MPEP 2143.01 (VI).

Arts discloses that the indoor air quality module is particularly effective against bacteria and viruses but does not disclose the particular effectiveness against harmful gases such as carbon monoxide and nitrogen oxides. Ichikawa discloses a particular monolithic filter configuration that is effective against these particular harmful gases. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the particular monolithic filter of Ichikawa in place of one or more of the filters of Arts in order to produce an apparatus that is effective against both bacteria and harmful gases, wherein such an apparatus would comprise both types of filters which would not allow the contaminants to move freely. Furthermore, a simple replacement of the filter of Arts with the monolithic filter of Ichikawa would not require

substantial reconstruction as a mere substitution of the two filters would be relatively straightforward. As such, the combination is proper.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEVIN C. JOYNER whose telephone number is (571)272-2709. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.